

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

3. I have reviewed the specification and the pending claims in the above-referenced application. It is my understanding that the pending claims in the above-referenced application include the following language:

providing an antibody or antigen binding portion thereof which competes for binding to prostate specific membrane antigen (PSMA) with a monoclonal antibody selected from the group consisting of an E99, a J415, a J533, and a J591 monoclonal antibody

As will be described in detail below, upon reviewing the specification of the above-referenced application, one of ordinary skill in the art at the time the application was filed, would have believed that the specification discloses, and the inventors were in possession of, this subject matter.

4. It is my understanding that the same or very similar language has been rejected by the Examiner in related cases. All of these related cases have identical specifications. In each case, the rejection was based on the Examiner's argument that the subject matter set out above was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the invention.

5. The reader is directed first to page 27 lines 26-35 of the specification of the above-identified application as filed. This passage discusses a particular embodiment wherein antibodies are used to direct two components<sup>1</sup> to a desired site, and provides as follows:

***a first biological agent*** is conjugated with a prodrug which is activated only when in close proximity with a prodrug activator. The prodrug activator is conjugated with ***a second biological agent according to the invention, preferably*** one which binds to a non-competing site on the prostate specific membrane antigen molecule. Whether two biological agents bind to competing or non-competing binding sites can be determined by conventional competitive binding assays.  
(*emphasis added*).

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<sup>1</sup> One component is an inactive drug, or prodrug, and the other is an activator of the prodrug.

From the passage recited above, it is clear to me that the cited text, in combination with the rest of the specification, discloses two types of antibodies<sup>2</sup> --those that compete for binding with an antibody “according to the invention” and those that do not compete for binding with an antibody “according to the invention”, the later being preferred in the particular embodiment being described. But whether preferred or not, it is clear from the text that the inventors were in possession of the idea of an antibody which competes for binding with an antibody according to the invention. The text also provides, see, e.g., the last sentence of the quoted passage, what constitutes a competing site and a non-competing site by stating that “whether two biological agents bind to competing or non-competing sites can be determined by conventional competition binding assays.” Therefore, the application necessarily discloses the concept of an antibody that competes for binding with an antibody according to the invention. It is clear to me —that, upon reviewing the specification of the above-referenced application, one of ordinary skill in the art at the time the application was filed, would have believed that the specification discloses, and the inventors were in possession of, this element of the invention, namely, an antibody that competes for binding with an antibody according to the invention.

6. It is also clear to me that, upon reviewing the specification of the above-referenced application, one of ordinary skill in the art at the time the application was filed, would have believed that monoclonal antibodies E99, J415, J533 and J591 are “antibodies according to the invention.” These four antibodies are disclosed throughout the application as being antibodies of the invention. In fact, the very next sentence, page 28, lines 1-6, after the passage recited above states as follows:

For example, monoclonal antibodies J591, J533, and E99 bind to competing binding sites on the prostate specific membrane antigen molecule. Monoclonal antibody J415, on the other hand, binds to a binding site which is non-competing with the site to which J591, J533, and E99 bind.

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<sup>2</sup> The term “biological agent” is defined at page 16, lines 16-20, to include antibodies. Most of the disclosure in the specification is with regard to antibodies, so one of ordinary skill would undoubtedly view the quoted section as applying to antibodies.

Thus, the application necessarily discloses that monoclonal antibodies E99, J415, J533 and J591 are antibodies according to the invention. Furthermore the specification, in that passage, gives an example of a specific set of antibodies which compete and an antibody that does not compete with members of the group.

7. As indicated in paragraph 5 above, and in particular in the second sentence of the quoted passage, it is clear that the Applicants disclosed a first antibody or portion thereof that competes for binding with a second antibody according to the invention and, as indicated in paragraph 6, monoclonal antibodies E99, J415, J533 and J591 are clearly antibodies according to the invention. It is clear to me – that, upon reviewing the specification of the above-referenced application, one of ordinary skill in the art at the time the application was filed, would have believed that the specification discloses, and the inventors were in possession of, this element of the invention, namely, “antibodies or portions thereof that compete for binding to PSMA with monoclonal antibodies E99, J415, J533 and J591.”

8. I want to be clear that I am not saying merely that the text makes it obvious to arrive at “antibodies or portions thereof that compete for binding to PSMA with monoclonal antibodies E99, J415, J533 and J591” or that the specification discloses a general concept of what antibodies might compete and that it is only obvious that these would be E99, J415, J533 and J591. On the contrary, it is clear to me that, upon reviewing the specification of the above-referenced application, one of ordinary skill in the art at the time the application was filed, would have believed that the text itself describes and actually shows possession of the subject matter in question. It is really a rather simple matter: a series of consecutive sentences in the specification build on one another and require this conclusion. I have summarized the situation below, where the relevant text (e.g., page 27, line 26, through page 28 line 6) is presented in annotated form:

Text from the specification	Meaning
In a particularly preferred embodiment of the present invention, a first biological agent is conjugated with a prodrug which is activated only when in close proximity with a prodrug activator. (page 27, lines 26-29)	
The prodrug activator is conjugated with a second biological agent according to the invention, preferably one which binds to a non-competing site on the prostate specific membrane antigen molecule. Whether two biological agents bind to competing or non-competing binding sites can be determined by conventional competitive binding assays. (page 27, lines 29-35)	These two sentences tell one of ordinary skill that the applicant was in possession of antibodies which compete with antibodies of the invention and give the meaning of the term compete for binding.
For example, monoclonal antibodies J591, J533, and E99 bind to competing binding sites on the prostate specific membrane antigen molecule. Monoclonal antibody J415 on the other hand, binds to a binding site which is non-competing with the site to which J591, J533, and E99 bind. (page 28, lines 1-6)	This sentence, the next sentence in the specification, tells one that the specific antibodies mentioned in the claim (J415, J591, J533 and E99) are antibodies of the invention.

Thus, one reading this passage, learns from the first four sentences that antibodies which compete for binding with antibodies of the invention are described. A few lines later one learns that J415, J591, J533 and E99 are antibodies of the invention. It is simply inescapable that the specific examples of antibodies of the invention, J415, J591, J533 and E99, provided in the text can be placed in the context of the earlier sentence. It is clear to me that, upon reviewing the specification of the above-reference application, one of ordinary skill at the time the application was filed, would have believed that the specification discloses, and the inventors were in possession of, antibodies that compete

for binding with the listed antibodies, in other words, antibodies that compete for binding with one or more of J415, J591, J533 or E99.

9. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

DATE:

7/22/04



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**Education:**

1986, Ph.D., Molecular Biology, University of Arizona. Immunological Studies of Human Cathepsin D

1980, B.A., Biology, University of California, San Diego

**Experience Overview:**

- Extensive experience in the area of pharmaceutical development and commercialization including; functional line and matrix area oversight.
- Biopharmaceutical Pipeline and Portfolio Management for both small and large molecules
- Specific scientific expertise in the areas of transplantation biology, co-stimulation, growth and wasting.
- Technical expertise in the areas of; monoclonal antibody discovery, development and characterization, immunoassay and analytical methods development and Preclinical biology.
- Managerial experience including the management of individuals and diverse groups consisting of individuals from the VP to RA level.
- Compliance experience including the organization and maintenance of GLP and GMP compliant laboratories and information management systems.
- Translational biology experience focused on the integration of novel analytical methods into clinical studies and the movement of therapeutic proteins from research into the clinic.

**Employment:**

August 2001 to Present Senior Vice President, R&D Strategy and Operations, **Millennium Pharmaceuticals**, Cambridge, MA. Responsibilities include:

- Oversight the Project Management, Scientific Development and R&D Planning and Operations areas.
- Co-Chair of the Pipeline Review Committee responsible for operational and strategic oversight of the R&D pipeline, investment prioritization and technical review of programs from late lead optimization through commercialization.

- Member of the Strategic Portfolio Committee, a subcommittee of the Management Team responsible for integration of R&D, Commercial, Business Development opportunities.
- Interface with the R&D subcommittee of the BOD on pipeline and R&D strategy.

June 2000 to August 2001 Vice President, Biotherapeutics, **Millennium Pharmaceuticals**, Cambridge, MA. Responsibilities include:

- Oversight of the following functional areas: Therapeutic Antibody Technology Group, Protein Sciences (discovery and process development), Biological Assay Development, Mouse Models Development and the Animal Resources Group.
- Participation on the Discovery Scientific Review Committee, Development Scientific Review Committee and Product Team (development portfolio management)

October 1999 to June 2000, Assistant Vice President, Predevelopment – Biopharmaceutical Core Technologies, **Genetics Institute of Wyeth Ayerst Research**, Andover/Cambridge, MA. Responsibilities included:

- Oversight of the following functional areas: Therapeutic Antibody Technology Group, Research Protein Supply, Proteomics, Bioanalytical Sciences, Pharmacokinetic and Pharmacodynamic Sciences, Laboratory Animal Resources, Preclinical Scientific Communications, Research Operations and the External Research Department.
- Oversight of “predevelopment process” for therapeutic proteins moving from discovery research into development (Lead Candidate through IND).
- Preclinical Project Team Leader for the Anti-B7.1/Anti-B7.2 Program in GvHD and Renal Transplantation

November 1993 to June 1999, Director /Senior Scientist of Bioanalytical Sciences at **Genetics Institute**, Andover, MA. Responsibilities included:

- Oversight of the Antibody Technology Group, Bioanalytical Sciences and the Preclinical Transcriptional Profiling group (Gene Expression Monitoring).
- The establishment and oversight of a GLP compliant immunoassay lab, including laboratory automation (sample tracking, sample manipulation and data transfer), assay validation and facility management.
- Member of the Analytical Coordinating Group (ACG) responsible for the immunoassays used for identity testing, ligand binding analysis and immunoassays for host cell protein impurities to support process and product development.



- Oversight of the assessment and interpretation of anti-product immune responses for Preclinical and clinical studies.

May of 1993 to November 1993, Associate Director/Senior Scientist, Medicinal and Analytical Chemistry, **Genentech Inc.**, South San Francisco, CA. Responsibilities included:

- Oversight of the Bioanalytical Methods Development group, responsible for immunoassay development for research, Preclinical, clinical and product development support
- Preclinical Research Project Team Leader for the IGF-1 Program

June 1986 to May of 1993, Scientist, Medicinal and Analytical Chemistry, **Genentech Inc.**, South San Francisco, CA. Responsibilities included:

- Development of antibodies and immunoassays for the quantitation of human and animal growth hormones in serum and urine and the assessment of the anti-growth hormone antibody response.
- Development of antibodies and immunoassays for the quantitation of human Insulin-like Growth Factor 1 (IGF-1) and IGF-1 binding proteins in serum and urine to support preclinical and clinical pharmacokinetics and pharmacodynamics
- Development of antibodies and immunoassays for the quantitation of gamma interferon, TNF-alpha, HSA, Human Relaxin, Pro-Relaxin, and Relaxin "A" and "B" chains in serum, urine and cell expression systems
- Development of immunoassays for the quantitation of E. coli and CHO derived host cell protein impurities

1984 to 1986, Research Associate, **University of Arizona Cancer Center**, Veteran's Administration Hospital, Tucson, AZ. Responsibilities included:

- Establishment of primary cells lines from prostate tumor and benign prostatic hypertrophy specimens.
- Development of assays to differentiate cytostatic from cytotoxic biological response modifiers.
- Development of immunohistochemical staining methods for the detection of prostate cancer cells in bone marrow.

### **Publications:**

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